

COMPLETE LISTING OF CLAIMS
IN ASCENDING ORDER WITH STATUS INDICATOR

Claim 1 (currently amended): A semiconductor device manufacturing system for manufacturing a semiconductor device on a wafer, comprising:

a first exposure apparatus for ~~exposing said wafer using~~ forming one part of a pattern of the semiconductor device on the wafer by exposing a light source while moving said wafer with a predetermined interval; and

a second exposure apparatus for ~~exposing said wafer~~ forming the other part of said pattern of the semiconductor device on the wafer by irradiating a plurality of electron beams on said wafer, said plurality of electron beams having an interval of substantially N times or 1/N times, where N is a natural number, of said predetermined interval.

Claim 2 (currently amended): A semiconductor device manufacturing system ~~as claimed in claim 1 wherein~~ for manufacturing a semiconductor device on a wafer, comprising:

a first exposure apparatus for exposing said wafer using a light source while moving said wafer with a predetermined interval; and

a second exposure apparatus for exposing said wafer by irradiating a plurality of electron beams on said wafer, said plurality of electron beams having an interval of substantially N times or 1/N times, where N is a natural number, of said predetermined interval, wherein

said second exposure apparatus has a plurality of multi-axis electron lenses that converge each beam of said plurality of electron beams independently; and

each of said multi-axis electron lenses has a plurality of lens opening parts for said plurality of electron beams to pass through; and

said lens opening parts are separated with an interval of substantially N times or 1/N times of said predetermined interval of said first exposure apparatus for moving said wafer.

Claim 3 (original): A semiconductor device manufacturing system as claimed in claim 2, wherein: each said multi-axis electron lens has a plurality of dummy opening parts, through which the electron beams do not pass, arranged around a periphery of said plurality of lens opening parts.

Claim 4 (original): A semiconductor device manufacturing system as claimed in claim 2, wherein:

each said multi-axis electron lens has a lens unit that includes said lens opening parts; and said lens opening parts are arranged to be uniformly distributed all over said lens unit.

Claim 5 (original): A semiconductor device manufacturing system as claimed in claim 2, wherein:

each said multi-axis electron lens has a lens unit that includes said lens opening parts; and said lens opening parts are arranged in said lens unit in a belt-like shape.

Claim 6 (original): A semiconductor device manufacturing system as claimed in claim 4 or 5, wherein: said lens opening parts at a center region of said lens unit have a diameter that is smaller than the diameter of said lens opening parts at an outer region of said lens unit.

Claim 7 (original): A semiconductor device manufacturing system as claimed in claim 4 or 5, wherein:

said lens unit includes a first lens-part magnetic conductive member and a second lens-part magnetic conductive member that are arranged substantially parallel to each other with a space in between; and

said lens unit further includes a nonmagnetic conductive member in the space between said first lens-part magnetic conductive member and said second lens-part magnetic conductive member.

Claim 8 (original): A semiconductor device manufacturing system as claimed in claim 2, wherein:

each said multi-axis electron lens has a lens unit that includes said lens opening parts and a coil unit provided around said lens unit for generating magnetic fields; and

said coil unit includes a coil part magnetic conductive member, which is a magnetic conductive member, and a coil for generating said magnetic fields; and

said lens unit includes a plurality of lens-part magnetic conductive members, which are magnetic conductive members; and

magnetic permeability of a material that forms said coil-part magnetic conductive member and magnetic permeability of a material that forms said lens-part magnetic conductive members are different.

Claim 9 (original): A semiconductor device manufacturing system as claimed in claim 1, wherein:

said second exposure apparatus has a plurality of deflectors that deflect each beam of said plurality of electron beams independently; and

said deflectors are separated with an interval of substantially N times or 1/N times of said predetermined interval.

Claim 10 (currently amended): An electron beam exposure apparatus for exposing a wafer, in combination with exposure by an optical stepper, using a plurality of electron beams, comprising:

an optical stepper; and

an exposure unit for exposing said wafer by irradiating said plurality of electron beams on said wafer in combination with exposure by said optical stepper, said plurality of electron ~~beam~~ beams having an interval of substantially N times or 1/N times, where N is a natural number, of a predetermined interval of said optical stepper for moving said wafer.

Claim 11 (original): An electron beam exposure apparatus as claimed in claim 10, wherein: said exposure unit has a plurality of multi-axis electron lenses that converges each beam of said plurality of electron beams independently; and each of said multi-axis electron lenses has a plurality of lens opening parts for passage of said plurality of electron beams; and said lens opening parts are separated with an interval of substantially N times or 1/N times of said predetermined interval.

Claim 12 (original): An electron beam exposure apparatus as claimed in claim 11, wherein: each said multi-axis electron lens has a plurality of dummy opening parts, through which the electron beams do not pass, arranged around a periphery of said plurality of lens opening parts.

Claim 13 (original): An electron beam exposure apparatus as claimed in claim 11, wherein: each said multi-axis electron lens has a lens unit that includes a plurality of said lens opening parts; and said lens opening parts are arranged to be substantially uniform all over said lens unit.

Claim 14 (original): An electron beam exposure apparatus as claimed in claim 11, wherein: each said multi-axis electron lens has a lens unit that includes said lens opening parts; and said lens opening parts are provided in said lens unit such that said lens opening parts form a belt-like shape.

Claim 15 (original): An electron beam exposure apparatus as claimed in claim 13 or 14, wherein: said lens opening parts at a center region of said lens unit have a diameter that is smaller than the diameter of said lens opening parts at an outer region of said lens unit.

Claim 16 (original): An electron beam exposure apparatus as claimed in claim 13 or 14, wherein:

said lens unit includes a first lens-part magnetic conductive member and a second lens-part magnetic conductive member that are arranged substantially parallel to each other with a space in between; and

said lens unit further includes a nonmagnetic conductive member in the space between said first lens-part magnetic conductive member and said second lens-part magnetic conductive member.

Claim 17 (original): An electron beam exposure apparatus as claimed in claim 11, wherein: each said multi-axis electron lens has a lens unit that includes said lens opening parts and a coil unit provided around said lens unit for generating magnetic fields; and

said coil unit includes a coil part magnetic conductive member, which is a magnetic conductive member, and a coil for generating said magnetic fields; and

said lens unit includes a plurality of lens-part magnetic conductive members, which are magnetic conductive members; and

magnetic permeability of a material that forms said coil-part magnetic conductive member and magnetic permeability of a material that forms said lens-part magnetic conductive members are different.

Claim 18 (original): An electron beam exposure apparatus as claimed in claim 10, wherein: said exposure unit has a plurality of deflectors that deflect each beam of said plurality of electron beams independently; and

said deflectors are separated with an interval of substantially N times or 1/N times of said predetermined interval.

Claim 19 (canceled)